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The question, in short, is: Precisely what does immediate mean in the latest formulation of the new philosophy; how strictly is it taken? If taken strictly, how does immediatism escape the fate of Hume? If loosely taken, how does immediatism differ from idealism after all? What we need is the immediatist's account of the 'categories,' the 'a priori,' the principles of mediation, by whatever name, in terms of immediacy strictly taken.

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REVIEWS AND ABSTRACTS OF LITERATURE

University of Iowa Studies in Psychology. IV. Psychological Review, Monograph Supplements. Vol. VI., No. 5, March, 1905. Pp. 118.

This number of the Monograph Supplements contains three papers from the Psychological Laboratory of the University of Iowa. The first paper, 'Perimetry of the Localization of Sound,' by Daniel Starch (pp. 1-45), aims to obtain an accurate measurement of our capacity to differentiate the directions of tonal stimuli and to determine what sense-data constitute the basis of auditory localization. The apparatus employed was a Seashore perimeter, the stimulus being supplied by an electric fork; the method was a modified form of the method of right and wrong cases. The experiments consisted in sounding the tone first from a standard and then from a comparative direction and asking the subject to report the relative direction of the second stimulus. It was found that errors were most numerous when both tones came from points in the median plane. But when one stimulus came from the median plane and the other from a point slightly temporalward from the first, the conditions for accurate discrimination of direction were optimal. Localization was slightly more accurate in the anterior than in the posterior quadrant; and the difference limen was relatively high when the stimuli came from the lateral regions of the field. A remarkable feature of Starch's results is his discovery that the progressive refinement of function from relative obtuseness in the shoulderward directions to relative acuteness before and behind, is by no means constant or uniform; the degrees of sensitivity determined at these and intermediate points are not to be represented graphically by anything approximating a regular curve, but by a series of abrupt troughs and crests. The difference limens of adjacent regions frequently differ by as much as 100 per cent., and in one instance (fig. 7) by 200 per cent. In order to account for this irregularity the author assumes the existence of a system of auditory local signs; he supposes that every auditory direction possesses its own peculiar shading of intensity, pitch and clang-tint. No attempt is made, however, to correlate these direction-marks with peculiarities of structure of the auditory organ, *i. e.*, to refer the quantitative and qualitative differentiae which are held to be characteristic of a given direction to such phenomena of reinforcement and analysis as might be expected to result from the form

or inclination of that part of the curvilinear surface of the pinna upon which sound-waves from the given direction impinge. Nor is the reviewer convinced that the irregular distribution of sensitivity which Starch reports may not be due, in part at least, to the small and unsymmetrical dimensions of the room in which the experiments were conducted. Would this irregularity occur with localizations made in the open air or in a large room where the influence of reverberation from the walls, floor and ceiling is reduced to a minimum? Among the sense-data which might constitute a basis for the localization of auditory stimuli, Starch assigns a leading rôle to the intensity factor. Cutaneous and muscular sensations and apparent variations of pitch and clang-tint are also held to furnish a clue, and thus to render monaural localization possible.

In the second paper (pp. 47-101) Professor Seashore and Miss G. H. Kent report an investigation of the fluctuations of mental efficiency which occur during a prolonged period of mental work. A two-hour period was selected for investigation, and the mental work consisted in attending continuously to the tests which were employed in the successive determinations of the psychical efficiency. These determinations were made in a threefold manner: The subject's varying degree of sensibility was measured by determinations of the liminal intensity of a waxing and waning tone; his sensitivity was measured by his capacity to discriminate between tonal intensities; and his memory was tested by his ability to reproduce a series of tonal intensities in the order in which he had heard them. The results of the investigation show that periodicity is a characteristic of mental work; all three types of mental activity covered by the experiments manifest a well-marked recurrence of phase. The authors analyze this fluctuating wave of mental efficiency into three components or partials, which they designate, somewhat arbitrarily, second-waves, minute-waves and hour-waves. The second-wave has a maximum duration of only a few seconds,—its length being dependent upon the type of individual and the conditions of his work. This wave is itself composite; it is a resultant of relatively long waves of secondary passive attention and relatively short waves of active attention. The minute-waves may vary from a few seconds to twenty minutes in length. They are a function of practice and training; when the work is such as may be perfected by training, the minute-waves tend to disappear from the records. The causes which condition the hour-waves were not discovered; it was found, however, that their length tends to decrease as the work progresses. The authors call attention to a fourth type of wave,—the diurnal waves of efficiency, which are due to the refreshing influence of food, sleep and recreation.

The closing paper is an uninspired study by Dr. J. B. Miner of 'A Case of Vision Acquired in Adult Life' (pp. 103-118). Dr. Miner's patient was a young lady who had had a complete congenital cataract removed about three years before the present investigation was undertaken. The author proposes to 'utilize the modern laboratory equipment for testing systematically and quantitatively the senses and the learning

process of a blind person who has been made to see,' and incidentally to examine the validity of the popular tradition 'that the loss of sight in a blind person is compensated for by a greater keenness in the other senses.' But this program is unfortunately not carried out. The sensory tests instead of being systematic and quantitative are haphazard and inaccurate; and the results are recorded in such form that comparison with normal sensitivity is in most cases impossible. For instance, the problem of passive touch is dismissed with a single short sentence. The determinations of the limen of twoness 'were not numerous enough to be accurately stated.' The stimulus-limen of active touch is expressed in terms of the number of sheets of paper through which a fine wire could be felt,—a statement which is unmeaning as it stands, and no normal records are presented for comparison. No serious attempt seems to have been made to determine the kinesthetic sensitivity. The author reports that "with the tuning forks she distinguished, nine times out of ten, a difference of eight vibrations from the international $\dot{a}$ (435 vibrations). Tests with the audiometer also indicated that she was not far from the average in her discrimination and liminal (!) thresholds for sound." Other investigators have found that the normal difference limen for this region of the tonal scale is less than .3 vibrations; Dr. Miner confined his tests to a stimulus difference of eight vibrations and naïvely remarks that his patient's 'discrimination of simple tones was not unusually keen.' "Preliminary work with the spectroscope indicates that her spectrum is about one fifth longer than the average of ten students. The length is added to the violet end. I suspect that this difference is largely due to a difference of interest in the test (!)." "Accurate tests were made upon her ability to discriminate distances with both eyes compared with her monocular ability. Different sized balls were hung at varying distances from her. Using only one eye she judged them to be at the same distance when one was 15 cm. farther away. But the difference between the two balls was narrowed down to 6 cm. when both eyes were converged on one ball and then on the other." Just what this experiment is intended to demonstrate is not clear from the text. It seems unfortunate that Dr. Miner does not take the reader into his confidence at least to the extent of stating the sizes of the balls and the absolute distances at which they were suspended. The investigation of the *Lernprozess* is concerned for the most part with the development of space perception, and more particularly of tridimensionality and distance. The most interesting feature of this part of the study is the discovery that the early vision of the 'born-blind' is characterized by an utter absence of retinal rivalry, and a lack of fusion of the two retinal images. In her earlier experiments with the stereoscope each retinal image persisted independently of the other, and her visual objects appeared in duplicate. The author takes this result to mean that normal binocular vision is a capacity which one gradually acquires through experience.

Several printer's errors have crept into the text: 'irresistable' p. 72,

'breadth' (for 'breath') p. 72, 'eductional' (for 'educational') p. 118, and 'oculist' is spelled with a double 'c' on p. 112 and again on p. 114.

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What Pragmatism Is. C. S. PEIRCE. *The Monist*, April, 1905.

This article is the first of a series of three, and consists in an exposition of 'Pragmaticism.' It is to be followed by a second, presenting examples, and by a third, which is to furnish proof and establish the truth of Synecchism. As a designation for his own views the author coins the term Pragmaticism, in place of Pragmatism, since the latter has become too broad.

The meaning of a concept is reduced to that which shall have a bearing on human conduct, and, since only experimental phenomena can have such a bearing, is confined to experimental phenomena. The significance of such phenomena is that they are general and lie in the future. Since they are general, they are not determined by this or that special purpose or accidental circumstance. They are, however, significant for rational purposes and conduct just because of this generality. Reality is defined as that which is independent of what you or I may think about it, and truth as that which represents reality. The laws of nature, for instance, are true and represent a real. Not all generals, of course, are real, nor, apparently, are all reals generals. But generals of the experimental type are real and constitute the only meanings of Pragmaticism. Pragmaticism aims at a rational conduct whereby these generals may become more and more embodied in reality, for generals are effective in the determination of human conduct.

Truth, again, is defined in terms of fixed belief, the fixation being the result of the continuation of an experimental process. It is similar to that ethical process whereby, from the anticipation of results and reflection upon them, action, by this process of self-control, becomes more and more free from the necessity of self-reproach upon reflection. It thus becomes fixed in character, or destined, and the process of self-control is no longer necessary.

As belief becomes fixed by this process of prevision and reflection, it becomes more and more independent of the accidental and merely individual, and when it has reached the point of absolute fixation, it is true and represents a real. Beliefs are thus of the habit type and mostly unconscious. Mr. Peirce emphasizes the necessity of accepting the most, at least, of our instinctive beliefs, and says that what one can not doubt must be for him the absolute truth. As I understand him, however, the mere fixation of belief by lack of stimulation or effort is not sufficient. The process is of such a type that no amount of individual aberration can prevent the final form of fixation. In this way the ultimate course of belief is destined.

The test of a concept, then, is not merely that it terminate actually or conceivably in a percept, nor that it be followed by action, but that